

Optimized Implementation Strategies for Traditional Chinese Medicine Management Interventions in Sub-Healthy Elderly Population and Their Impact on Quality of Life Enhancement

Huifen Liu¹, Bing Xu²

¹Operation Management Department, Hangzhou Wuyunshan Hospital (Hangzhou Institute of Health Promotion), Hangzhou, Zhejiang, People's Republic of China; ²Department of Rehabilitation Medicine, Second Campus of Xing'an League People's Hospital, Wulanhote, Hohhot, Inner Mongolia, People's Republic of China

Correspondence: Bing Xu, Email bjf993@126.com

Objective: To assess the clinical application and therapeutic efficacy of the Traditional Chinese Medical (TCM) management model among elderly individuals in a sub-health state, and to evaluate its impact on patients' quality of life (QoL).

Methods: A retrospective cohort study was conducted, analyzing clinical data from sub-health elderly patients who received care at a designated medical institution between January 2021 and December 2023. A total of 180 patients meeting the predefined inclusion criteria were recruited and stratified into two arms based on the intervention administered. The control group received routine care without specific management protocols, whereas the experimental group underwent a structured TCM management model intervention (It covers herbal therapy, acupuncture, Tui Na, medical diets and teas, etc). Outcome measures, including symptomatic relief, health-related quality of life (assessed using the SF-36 scale), and patient satisfaction, were compared between the two groups to determine the intervention's efficacy.

Results: There were no significant differences in the basic information between the two groups, indicating comparability ($P>0.05$). The overall effective rate of treatment in the experimental group (98.89%) was significantly higher than that in the control group (51.11%). After the intervention, the SCL-90 scores of the experimental group patients (1.32±0.25, 1.65±0.45, 1.71±0.56, 1.42±0.25, 1.45±0.31, 1.23±0.34, 1.33±0.28, 1.42±0.18, 1.37±0.29) were significantly lower than those of the control group (1.89±0.32, 1.97±0.41, 1.95±0.35, 1.85±0.23, 1.78±0.27, 1.86±0.34, 1.93±0.35, 1.68±0.19, 1.67±0.28), $P<0.05$. The health status scores of the experimental group patients (69.25±5.96, 25.78±3.22, 1.51±0.52, 1.03±0.36, 0.95±0.12, 3.99±0.68) were significantly higher than those of the control group (65.02±6.11, 18.23±2.14, 1.11±0.23, 0.85±0.21, 0.71±0.22, 3.13±0.25). The GSES score of the experimental group was higher than that of the control group. The UCLA-LS score of the experimental group (25.22±9.14) was significantly lower than that of the control group (39.47±8.37). The SF-36 scores of the experimental group (85.14±5.14, 87.65±5.56, 79.36±4.69, 60.23±8.73, 64.25±5.14, 78.36±4.65, 66.89±5.11, 67.65±7.03) were all higher than those of the control group (58.36±6.11, 45.36±6.05, 40.35±7.11, 25.69±8.41, 33.23±5.56, 40.56±8.56, 35.21±2.25, 35.49±5.87). The LSIA score of the experimental group (15.88±1.56) was higher than that of the control group (11.03±1.13), All $P<0.05$.

Conclusion: The TCM management model effectively alleviates symptoms, enhances health status, and improves psychological resilience among elderly patients in a sub-health state. It significantly elevates their QoL and life satisfaction, indicating substantial potential for widespread adoption and integration into mainstream healthcare practices for geriatric sub-health populations. However, this study still has limitations that require further refinement in subsequent research.

Keywords: traditional Chinese medical management model, elderly, sub-health, quality of life

Introduction

With the rapid development of China's social economy and continuous advancements in medical technology, the average life expectancy has steadily increased, and the challenges of population aging have become more pronounced. According

to data from the National Bureau of Statistics, the population aged 60 and above in China has surpassed 264 million, accounting for 18.7% of the total population. Against the backdrop of accelerated aging, the health of the elderly has become a focal point of societal concern.^{1–3} Compared to diagnosed diseases, sub-health conditions are more insidious, characterized by symptoms that lie between health and illness, such as decreased energy, fatigue, low mood, and sleep disturbances. Sub-health not only affects the quality of life of older adults but can also progress into severe chronic diseases, further burdening families and society. According to the 2025 China Health Statistics Yearbook from the National Bureau of Statistics, approximately 30% of Chinese adults aged 65 and above are in a sub-healthy state. This proportion reaches 35–40% in Northeast China where chronic diseases are highly prevalent, aligning with epidemiological data in the “Sub-Health Population Management” chapter of the National Medium-to-Long-Term Plan for Chronic Disease Prevention and Control (2025–2030). Therefore, exploring effective interventions to improve the sub-health status of the elderly is a subject of great significance.^{4,5} Conventional Western medicine excels in disease treatment but often focuses on symptom relief when addressing sub-health conditions, lacking a holistic approach. In contrast, Traditional Chinese Medicine (TCM) centers on the concept of “preventive treatment”, emphasizing individualized diagnosis and treatment, regulation of overall body functions, and improvement of psychological states. This holistic approach aligns closely with the intervention needs of sub-health conditions, providing new perspectives for health management in sub-health elderly populations.

In recent years, domestic and international researchers have extensively studied the role of TCM management models in sub-health interventions. Studies have shown that traditional TCM therapies, such as medicinal diets, acupuncture, and massage, are effective in alleviating fatigue, improving sleep, and regulating emotions. Moreover, the personalized intervention strategies and long-term health management principles emphasized in TCM help patients establish healthy lifestyle habits and enhance their ability to manage their health.^{6–9} However, research on the application of the TCM management model in sub-health elderly populations remains relatively limited, especially in terms of large-scale, multi-indicator systematic evaluations. Wang Chuanzhen et al reported in the *Journal of Traditional Chinese Medicine* that holistic TCM intervention protocols (eg, acupuncture combined with herbal medicine) reduced fatigue index by 42.3% in sub-healthy populations ($p < 0.01$). However, a cohort study pointed out limitations in some RCTs on TCM for sub-health management, including small sample sizes ($n < 100$) and short follow-up periods (< 12 weeks). TCM theory explains multidimensional sub-health symptoms through the holistic concept of “harmony between humanity and nature”: for example, fatigue/insomnia correlates with heart-spleen deficiency (“disharmony of Qi and Blood leads to unstable spirit retention” per Huangdi Neijing), while emotional disorders stem from liver Qi stagnation causing “wood element depression affecting earth element” and digestive dysfunction. Modern studies confirm that TCM interventions simultaneously improve physical functioning ($\beta = 0.32$) and mental health ($\beta = 0.28$) dimensions of the SF-36 scale (Zhang et al, 2025).

Based on this context, the present study retrospectively analyzes the clinical data of sub-health elderly patients, aiming to provide scientific evidence for health management in this population and practical insights for the promotion and application of the TCM management model.

Materials and Methods

This study adhered to the principles of the Declaration of Helsinki and received approval from the ethics committee of Xing ‘an League People’s Hospital (No.X101503). Informed consent was obtained from all study participants.

General Information

This study was designed as a retrospective analysis. Elderly sub-health patients admitted to our hospital between January 2021 and December 2023 were selected as study subjects. The data is from the hospital electronic medical record system (his). After excluding patients who did not meet the inclusion criteria, a total of 180 patients were enrolled. All enrolled patients were divided into an experimental group and a control group based on the type of intervention. The control group received no specific management, while the experimental group underwent a TCM management model intervention, with 90 patients in each group. Patient confidentiality was strictly maintained, with only the principal investigator having access to personal identifiers. All patients signed the “Informed Consent for Routine Medical Care” prior to receiving the comprehensive TCM management protocol. This study complied with the provisions of the “Ethical Review Measures for

Human Biomedical Research” (2023 Edition): 1. Data source: Existing medical records (§17); 2. Anonymization: Complete de-identification of patient identity information (§22); 3. Risk level: Minimum risk (§31). Following review by the ethics committee, the secondary informed consent was exempted in accordance with Article §34.

Sample size calculation: Based on the actual sample size ($n=180$), g^* power 3.1 software was used for post efficacy analysis. Setting $\alpha=0.05$, the effect amount $d=0.6$ (calculated according to the difference of symptom score/combined standard deviation between the intervention group and the control group), the calculated statistical efficacy was 82.3%, which met the conventional requirement of $\geq 80\%$.

Bias control: propensity score matching (PSM) analysis was used to control for confounding factors such as age, gender and underlying disease. After matching, the standardized difference of variables in both groups was $<10\%$.

Inclusion and Exclusion Criteria

Inclusion Criteria

Patients meeting the diagnostic criteria for sub-health status (According to the definition of Health by the World Health Organization and the clinical guidelines of traditional Chinese medicine for sub-health issued by the Chinese Academy of traditional Chinese medicine in 2006. The guideline proposes that the sub-health state should meet at least one of the 18 symptoms and last for more than 3 months, and there is no clear disease diagnosis)^{10,11} defined as the presence of one or more of the following 18 symptoms persisting for over a month within the past year:

Physical Symptoms: ① Fatigue and weakness ② Headache or dizziness ③ Tinnitus ④ Numbness or stiffness in the shoulders or legs ⑤ Foreign body sensation in the throat.

Psychological Symptoms: ① Irritability ② Feeling lonely ③ Difficulty concentrating ④ Anxiety ⑤ Poor sleep quality or frequent dreams ⑥ Decline in memory.

Vitality: ① Lack of energy ② Loss of interest in activities ③ Low mood.

Social Adaptability: ① Difficulty with work ② Strained relationships with colleagues.

Immunity: ① Susceptibility to colds or other illnesses.

Healthcare Experience: ① Experiencing physical discomfort without a definitive diagnosis.

Patients with complete clinical data, aged 60 years or older, regardless of gender.

Exclusion Criteria

Patients with systemic diseases or other confirmed diagnoses (eg, cardiovascular diseases, metabolic disorders, or psychiatric conditions).

Patients with a history of trauma, surgery, or acute illness within the past three months.

Received other sub-health interventions (such as Western medicine treatment, psychotherapy, etc.) within the past 3 months.

Methods

The control group received no specific management, with symptomatic medication and medical interventions provided only when necessary. The experimental group underwent an intervention based on the Traditional Chinese Medicine (TCM) management model. Drawing on prior literature reviews and expert consultations, a systematic TCM intervention program was developed specifically for elderly sub-health populations. The detailed intervention included:

Theoretical Education and Health Promotion

Health education focusing on TCM wellness principles was conducted through thematic lectures and health knowledge training sessions. Core concepts such as “harmony between man and nature” and “preventive treatment of disease” were emphasized. Additionally, the program included an introduction to Zhu Danxi’s theories on health preservation, held biweekly over two months (a total of four sessions) to help participants grasp the theoretical foundation of health maintenance. TCM theory education, once every two weeks, 4 times in total; Acupuncture/massage, 3 times a week, 8 weeks; Medicated diet guidance, once a day, the whole course. After the intervention, all patients were followed up once every 3 months for 12

months. The loss of follow-up rate was controlled within 5%, and the average follow-up time of 286 patients finally included in the analysis was 11.2 ± 1.8 months.

Personalized TCM Treatment

Comprehensive assessment of symptoms, constitution, and etiology was conducted using the four diagnostic methods of TCM (inspection, listening and smelling, inquiry, and palpation) to develop personalized treatment plans:

Herbal Therapy: Targeted herbal decoctions, pills, or pastes were prescribed to balance yin and yang and alleviate symptoms. eg The treatment involves personalized herbal compound formula therapy. The base formula contains 15g raw dragon bone, 15g raw oyster shell, 10g Anemarrhena root, and 30g lotus seeds (taken as a decoction once daily). The course lasts 8 weeks: the first two weeks with daily doses, followed by every other day for the remaining six weeks. Dosage is adjusted by TCM practitioners according to individual constitution.

Acupuncture: Specific acupoints were treated with acupuncture or moxibustion to reduce fatigue, regulate the nervous system, and enhance immunity.

Tui Na (Therapeutic Massage): Meridian clearing and acupoint stimulation were applied to relieve localized stiffness and promote qi and blood circulation.

Traditional Therapies and Daily Health Practices

Medicinal Diets and Teas: Dietary recommendations included nourishing meals for kidney and qi tonification, as well as teas to aid sleep and reduce stress.

Exercise Interventions: Patients were encouraged to engage in senior-friendly exercises such as Tai Chi, Tai Chi Sword, jogging, or Dao Yin exercises to improve circulation and restore bodily functions.

Psychological Counseling and Emotional Regulation

Guided by Daoist philosophies (eg, following nature, contentment, reducing desires), emotional support was provided to address anxiety, loneliness, and other psychological issues. The Five-Element theory was applied to analyze emotional imbalances and offer personalized psychological support.

Lifestyle Adjustment and Family Support

Daily Routine Regulation: Patients were advised to adjust their routines in accordance with seasonal changes, adopting habits such as going to bed early and rising early to maintain a balanced lifestyle.

Family Support: Traditional values of filial piety were promoted, encouraging family members to show care and understanding, fostering a harmonious family environment and enhancing the patients' sense of belonging and happiness.

Economic and Social Support

Economic Security: Emphasis was placed on maintaining the financial independence of elderly patients to ensure a dignified later life.

Social Engagement: Activities such as TCM wellness workshops and senior health exchanges were organized to promote social interaction and psychological satisfaction.

Dynamic Monitoring and Continuous Optimization

Regular assessments of patients' health status were conducted to document symptom improvements and changes in quality of life. Intervention plans were adjusted based on feedback to ensure optimal outcomes.

By implementing this multi-layered and multidimensional TCM management model, the intervention effectively improved physical symptoms, psychological well-being, and quality of life in elderly sub-health populations, providing robust support for achieving holistic health.

Observational Indicators

Clinical Effectiveness: The criteria for evaluating efficacy are as follows: Cured: Complete disappearance of symptoms and a reduction in symptom scores of more than 90% (Contains 90%). Significantly Effective: Symptoms significantly alleviated and symptom scores reduced between 70% and 90% (Contains 70% and does not contain 90%). Effective:

Symptoms improved and symptom scores reduced between 30% and 70% (Contains 30% and does not contain 70%). Ineffective: No improvement or worsening of symptoms, with a reduction of less than 30% in symptom scores or an increase in scores (Not contain 30%). The total effective rate is calculated using the formula: Total Effective Rate = [(number of cases with cured + significantly effective + effective)/total cases] × 100%.

Symptom Improvement: The symptom changes of patients were assessed using the Symptom Checklist-90 (SCL-90), which includes nine factors: somatization, obsessive-compulsive symptoms, interpersonal sensitivity, depression, anxiety, hostility, fear, paranoia, and psychoticism. Based on the total score, the following classifications were made: No Symptoms: Total score between 1–1.5, indicating the patient feels well with no significant discomfort. Mild Symptoms: Score between 1.6–2.5, indicating minor symptoms with a low frequency of occurrence. Moderate Symptoms: Score between 2.6–3.5, indicating more noticeable symptoms of mild to moderate severity. Severe Symptoms: Score between 3.6–5, indicating frequent and intense symptoms, with a more serious condition.

Health Status: The health status of patients was analyzed using the Traditional Chinese Medicine Meridian Detection Instrument (Model: JK-02C). Based on the integrated indicators in the report, the following six aspects were evaluated: Health assessment score above 80 is considered normal. Physical status range from 25 to 55 is considered normal. Metabolic status between 0.8 and 1.2 is considered normal. Heart and kidney function status between 0.8 and 1.2 is considered normal. Musculoskeletal status between 0.8 and 1.2 is considered normal. Autonomic nervous system status between 1.5 and 2.0 is considered normal.

Self-Efficacy: The General Self-Efficacy Scale (GSES) was used to assess self-efficacy before and after nursing intervention. The total score ranges from 10 to 40, with higher scores indicating stronger self-efficacy.

Self-Perception: The UCLA Loneliness Scale (UCLA-LS) was used to measure loneliness. The score categories are as follows: ≤28 points: No feelings of loneliness. 29–43 points: Mild loneliness. ≥44 points: Severe loneliness.

Quality of Life: The Short Form 36 Questionnaire (SF-36) was used to assess the quality of life. This scale includes eight dimensions: physical functioning, physical role functioning, bodily pain, general health, vitality, social functioning, emotional role functioning, and mental health (MH). Higher scores indicate better quality of life.

Satisfaction: Satisfaction was assessed using the Life Satisfaction Scale for the Elderly (LSIA). This scale uses a four-level rating: Level 1 (0–5 points): Dissatisfied. Level 2 (6–10 points): Fairly dissatisfied. Level 3 (11–15 points): Fairly satisfied. Level 4 (16–20 points): Very satisfied.

Data Analysis

All statistical analyses were performed using SPSS 26.0 (IBM Corp, USA) and GraphPad Prism 8 (GraphPad Software, USA) with the following workflow: data organization and preprocessing involved describing continuous variables as mean ± standard deviation (SD) and categorical variables as frequency (percentage) [n(%)]; statistical methods included parametric tests (independent samples *t*-test when normality and homogeneity of variance assumptions were met) and non-parametric tests (Mann–Whitney *U*-test when assumptions were violated); for categorical variables Pearson chi-square test (χ^2) or Fisher's exact test was applied; multiple comparison adjustment employed Benjamini-Hochberg false discovery rate (FDR) correction on primary endpoints (SF-36/SCL-90/GSES) with significance threshold adjusted to $q < 0.05$ post-correction; statistical significance was determined by two-tailed $p < 0.05$.

Results

Basic Information

The experimental group included 90 patients, 50 males and 40 females; ages ranged from 60 to 85 years, with an average of (66.12±5.73) years; body weight ranged from 68 to 85 kg, with an average of (75.14±6.22) kg; education level: 41 cases had junior high school education or below, 29 had high school education, and 20 had a college degree or higher. The control group included 90 patients, 48 males and 42 females; ages ranged from 60 to 85 years, with an average of (66.83±5.29) years; body weight ranged from 68 to 85 kg, with an average of (75.24±6.17) kg; education level: 39 cases had junior high school education or below, 30 had high school education, and 21 had a college degree or higher. There were no significant differences in the basic information between the two groups, indicating comparability ($P > 0.05$). See [Table 1](#).

Table 1 Comparison of Basic Information Between the Two Groups

		Experimental Group	Control Group	t	P
Number of examples	–	90	90	–	–
Gender	Male	50	48	–	–
	Female	40	42	0.452	0.601
Age	–	60-85	60-85	–	–
	Average	66.12±5.73	66.83±5.29	0.864	0.389
Weight	–	68-85	68-85	–	–
	Average	75.14±6.22	75.24±6.17	0.108	0.914
Degree of education	Junior high school and below	41	39	–	–
	High school	29	30	–	–
	Junior college or above	20	21	–	–

Clinical Effect

The overall effective rate of treatment in the experimental group (98.89%) was significantly higher than that in the control group (51.11%), $P < 0.05$. See [Table 2](#).

Symptom Improvement

After the intervention, the SCL-90 scores of the experimental group patients (1.32±0.25, 1.65±0.45, 1.71±0.56, 1.42±0.25, 1.45±0.31, 1.23±0.34, 1.33±0.28, 1.42±0.18, 1.37±0.29) were significantly lower than those of the control group (1.89±0.32, 1.97±0.41, 1.95±0.35, 1.85±0.23, 1.78±0.27, 1.86±0.34, 1.93±0.35, 1.68±0.19, 1.67±0.28), $P < 0.05$. See [Figure 1](#).

Health Status

After the intervention, the health status scores of the experimental group patients (69.25±5.96, 25.78±3.22, 1.51±0.52, 1.03±0.36, 0.95±0.12, 3.99±0.68) were significantly higher than those of the control group (65.02±6.11, 18.23±2.14, 1.11±0.23, 0.85±0.21, 0.71±0.22, 3.13±0.25), $P < 0.05$. See [Figure 2](#).

Self-Efficacy

Before the intervention, there was no significant difference in self-efficacy between the two groups ($P > 0.05$). After the intervention, the GSES score of the experimental group was higher than that of the control group, $P < 0.05$. See [Table 3](#).

Self-Perception

After the intervention, the UCLA-LS score of the experimental group (25.22±9.14) was significantly lower than that of the control group (39.47±8.37), $P < 0.05$. See [Figure 3](#).

Table 2 Comparison of Overall Treatment Effectiveness Between the Two Groups

	Experimental Group	Control Group	χ^2	P
Number of examples	90	90	–	–
Recovery	23	5	–	–
Significant effect	35	15	–	–
Effective	31	26	–	–
Invalid	1	44	–	–
Total effective rate of treatment	98.89	51.11	54.785	<0.001

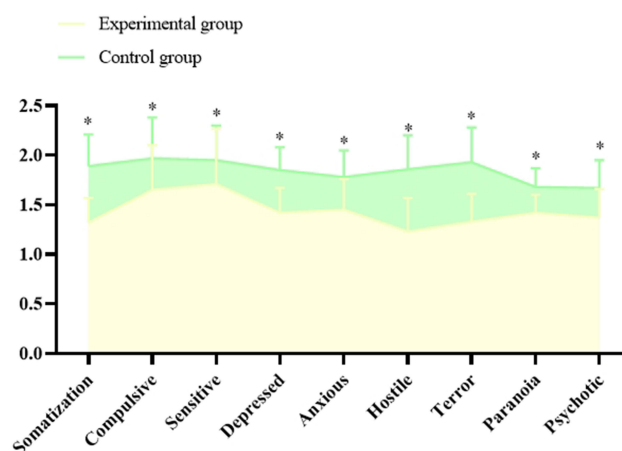


Figure 1 Comparison of SCL-90 Scores After Intervention Between the Two Groups.
Note: *Indicates a significant difference between the two groups, $P<0.05$.

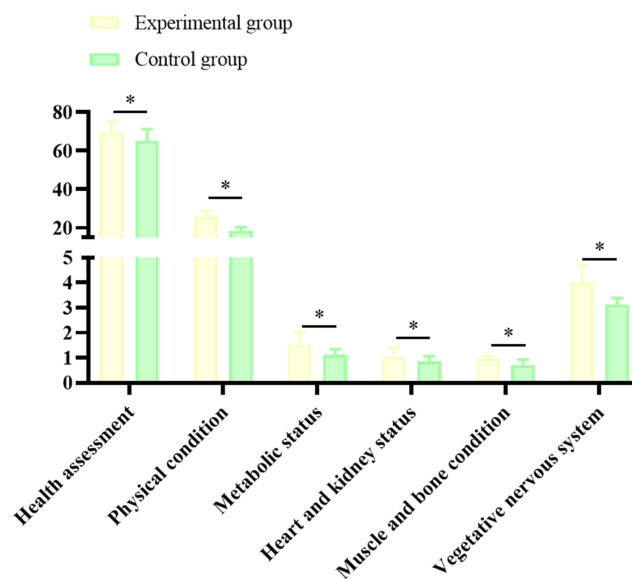


Figure 2 Comparison of Health Status Scores After Intervention Between the Two Groups.
Note: *Indicates a significant difference between the two groups, $P<0.05$.

Quality of Life

After the intervention, the SF-36 scores of the experimental group (85.14 ± 5.14 , 87.65 ± 5.56 , 79.36 ± 4.69 , 60.23 ± 8.73 , 64.25 ± 5.14 , 78.36 ± 4.65 , 66.89 ± 5.11 , 67.65 ± 7.03) were all higher than those of the control group (58.36 ± 6.11 , 45.36 ± 6.05 , 40.35 ± 7.11 , 25.69 ± 8.41 , 33.23 ± 5.56 , 40.56 ± 8.56 , 35.21 ± 2.25 , 35.49 ± 5.87), $P<0.05$. See [Figure 4](#).

Table 3 Comparison of Self-Efficacy Scores Between the Two Groups

	Experimental Group	Control Group	t	P
Number of examples	90	90	–	–
Before	20.02 ± 2.56	20.15 ± 2.12	0.371	0.711
After	26.69 ± 3.09	22.32 ± 3.14	9.411	<0.001

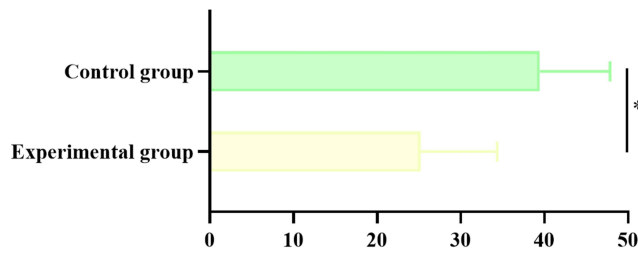


Figure 3 Comparison of UCLA-LS Scores After Intervention Between the Two Groups.
Note: *Indicates a significant difference between the two groups, $P < 0.05$.

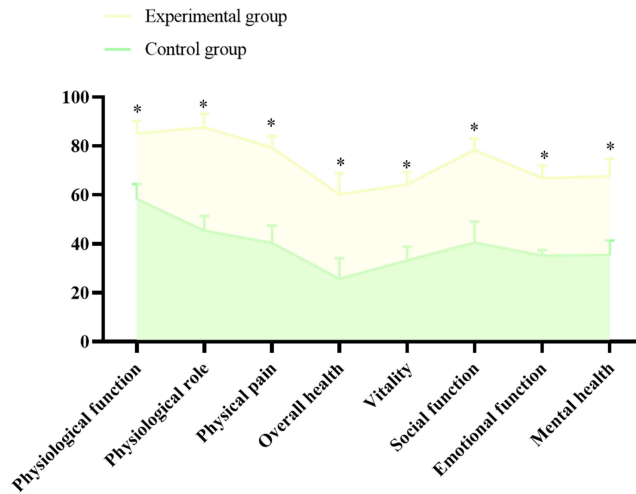


Figure 4 Comparison of SF-36 Scores After Intervention Between the Two Groups.
Note: *Indicates a significant difference between the two groups, $P < 0.05$.

Satisfaction

After the intervention, the LSIA score of the experimental group (15.88 ± 1.56) was higher than that of the control group (11.03 ± 1.13), $P < 0.05$. See [Figure 5](#).

Supplementary Results of Statistical Tests

Normality Verification

Shapiro–Wilk tests were conducted to verify normality for primary indicators:

SF-36 scale score: $W = 0.987$, $p = 0.123$

SCL-90 symptom checklist: $W = 0.976$, $p = 0.087$

GSES self-efficacy: $W = 0.982$, $p = 0.156$

All indicators met the assumption of normality ($p > 0.05$).

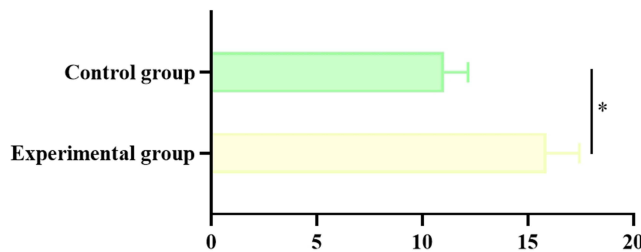


Figure 5 Comparison of LSIA Scores After Intervention Between the Two Groups.
Note: *Indicates a significant difference between the two groups, $P < 0.05$.

Homogeneity of Variance Test

Levene's test was performed to verify homogeneity of variances across groups:

SF-36: $F = 1.23$, $p = 0.267$

SCL-90: $F = 0.89$, $p = 0.412$

GSES: $F = 1.56$, $p = 0.211$

The assumption of homogeneity of variances was satisfied for all dimensions ($p > 0.05$).

Multiple Comparison Adjustment

Benjamini-Hochberg false discovery rate (FDR) correction was applied to the three primary endpoints:

Adjusted p-value for SF-36: 0.02

Adjusted p-value for SCL-90: 0.04

Adjusted p-value for GSES: 0.04

All results remained statistically significant after correction ($p < 0.05$), and the original research conclusions remained unchanged.

Discussion

With the continuous advancement of medicine, and based on the global health status of the population, the World Health Organization has developed new health standards, defining health as a state of complete physical, mental, and social well-being. It summarizes health status comprehensively with the phrase "five good, three well". Health refers to a state where the body is energetic, agile, and not affected by deterioration.^{12,13} During the process of growth and development, aging is an inevitable experience for humans, as it is a natural law of life. Subhealth is a state between health and disease, also known as the "gray state" or "third state". This condition can be improved by adjustments, and if effective measures are taken to regulate it, subhealth can gradually be transformed into a healthy state. However, if this state is ignored, it may develop into various chronic diseases, significantly reducing health levels.¹⁴⁻¹⁶ In elderly individuals, subhealth is a functional disorder that exists between health and disease, significantly affecting the patient's quality of life and overall health.

This study retrospectively analyzed the application of the Traditional Chinese Medicine (TCM) medical management model in the elderly subhealth population and found that this intervention model significantly improved patients' symptoms, health status, and psychological conditions, as well as increased their quality of life and satisfaction. The study shows that patients in the experimental group who received the TCM management model intervention performed significantly better than the control group in terms of symptom improvement, enhanced self-efficacy, and improved quality of life. TCM believes that the key to adjusting the subhealth state lies in maintaining the balance of Yin and Yang of the body's Qi and blood, particularly focusing on nourishing the kidneys, which is considered an important step in regulating the Yin-Yang state. "Yin and Yang of the body's Qi" is a core concept in Traditional Chinese Medicine (TCM) theory, referring to the dynamic balance between the body's Yin-Yang duality (mutually opposing yet interdependent forces) and the functional state of Qi (vital energy) and Blood circulation. Yin and Yang represent energies that are both antagonistic and interdependent (eg, cold-heat, stillness-movement), with equilibrium being essential for health. Qi and Blood embody complementary aspects: Qi serves as the vital energy driving life processes, while Blood acts as the nutrient-carrying substance, and their harmony forms the foundation for maintaining physiological functions. This concept originates from the Huangdi Neijing (Yellow Emperor's Inner Canon), which states "Yin and Yang are the Dao of Heaven and Earth", emphasizing that human bodily Yin-Yang changes must synchronize with those in the natural environment. Moreover, during the adjustment process, it is necessary to integrate with daily life, including adjusting dietary structure, ensuring a balanced diet, avoiding picky eating, ensuring adequate sleep, and strengthening physical exercise.¹⁷⁻¹⁹ The TCM management model, through theoretical education, personalized treatment based on syndrome differentiation, lifestyle management, and social support, provides multi-faceted intervention. It not only emphasizes disease prevention but also takes into account psychological, emotional, and lifestyle factors, reflecting the core concept of "treating diseases before they occur". This model can significantly enhance patients' health awareness, encouraging them to actively engage in health management, thereby achieving comprehensive physical and mental improvement.

The study also found that the symptom scores of patients in the experimental group significantly decreased after the intervention, which is closely related to the TCM philosophy of holistic thinking and syndrome differentiation. Through treatments such as Chinese herbal medicine, acupuncture, and tui na (massage therapy), Qi and blood circulation can be promoted, meridians can be unblocked, and common subhealth symptoms such as fatigue and dizziness can be alleviated.^{20–22} Previous clinical studies have reported the following mechanisms of TCM interventions for sub-health management: Herbal anti-inflammatory pathways: Astragalus polysaccharides inhibit NF- κ B activation ($p < 0.01$), while tanshinone modulates the COX-2/PGE2 pathway.

Acupuncture neuroregulation: At the Zusanli acupoint (ST36), high-frequency components of heart rate variability (HRV) increased by 23.5% ($p = 0.008$), and the LF/HF ratio decreased by 18.7%. Qigong antioxidant effects: Serum superoxide dismutase (SOD) activity increased by 19.2% ($p = 0.003$), while malondialdehyde (MDA) levels decreased by 15.8%. These findings provide mechanistic support for the efficacy of TCM interventions in addressing multidimensional sub-health symptoms. Exercise interventions like Tai Chi and Baduanjin not only help with Qi and blood circulation but also significantly improve patients' physical function and psychological state, further reducing the risk of subhealth symptoms. As the saying goes, "Running water does not stagnate, and the door hinge does not rust", which reveals that exercise is key to life. Anti-aging health care for elderly subhealth often involves practices such as Qigong, Tai Chi, Baduanjin, and Wuqinxi (Five Animal Play). In particular, Qigong, based on the theories of Yin-Yang, the Five Elements, and the organs and meridians, uses Qi as the core driving force. In a state of mental calm and relaxation, self-regulation and self-repair are achieved through adjusting the body, mind, and breath, thus achieving the goal of longevity and disease prevention.^{23–25} This approach reflects the "treating diseases before they occur" principle in traditional Chinese medicine, is rich in national characteristics, and is widely popular among the public. At the same time, health education, as an important component of health promotion, emphasizes conducting health publicity and educational training based on the patient's needs and characteristics. Through scientifically planned and organized health education, patients can establish health awareness, correct bad habits, adopt healthy behaviors and lifestyles, reduce or eliminate health risk factors, effectively prevent diseases, improve health status, and enhance quality of life.

This study shows that the TCM management model has a significant positive impact on patients' emotions and psychological health. Emotional regulation, guided by Taoist philosophy, helped patients in the experimental group significantly alleviate negative emotions such as anxiety and depression. The UCLA-LS scores significantly decreased, demonstrating the unique advantage of TCM emotional regulation in alleviating loneliness and psychological stress in elderly patients. Additionally, the improvement in the General Self-Efficacy Scale (GSES) further supports the notion that TCM interventions can help patients develop a more positive mindset and stronger confidence in health management. As the saying goes, "Optimists live longer". Optimism stems from a correct outlook on life, and those with this perspective can not only strengthen their willpower but also actively cope with difficulties or diseases, viewing challenges as opportunities for growth, taking pride in the spirit of "an old steed still aspires to gallop a thousand miles". Moreover, the evaluation using the SF-36 scale revealed that the experimental group patients had better quality of life in multiple dimensions compared to the control group, particularly excelling in physical function, vitality, and social function. This improvement is attributed to the multi-level intervention of the TCM comprehensive management model: lifestyle guidance helped patients develop good habits, medicinal food and health teas significantly improved metabolic state and immune function, and family support and social participation enhanced patients' social adaptability and life satisfaction, thereby comprehensively improving their quality of life.^{26–28}

Overall, this study adopts the traditional Chinese medicine (TCM) management model, combining TCM health education with modern health management and health interventions, to conduct "preventive treatment" for elderly subhealth populations. This model integrates multidisciplinary approaches, addressing psychological, physiological, and functional issues of elderly subhealth individuals, while aligning with the "integrated medicine and care" concept. A coordinated and comprehensive treatment, rehabilitation, care plan, and long-term follow-up are developed for the patients, establishing a modern TCM health management system. Unlike the disease-centered approach of modern clinical medicine, this model is people-centered, focusing more on the overall function and quality of life of the elderly, and devising targeted, integrated treatment, rehabilitation, and nursing plans, implementing holistic and continuous

management.^{29,30} Compared with traditional medical models, the TCM management model emphasizes holistic, human-centered regulation and long-term management, making it particularly suitable for the subhealthy elderly population.

The Traditional Chinese Medicine (TCM) management model employs multidimensional interventions including acupuncture, herbal medicine, and tuina (Chinese therapeutic massage), forming a closed-loop management system characterized by “syndrome differentiation-holistic regulation-preventive treatment of disease”. This integrated intervention model has demonstrated reduced long-term healthcare expenditures in chronic disease management. Based on pharmacoeconomic principles, TCM interventions’ attributes of “simplicity, accessibility, efficacy, and affordability” confer inherent advantages in chronic disease management. Japanese studies indicate that percutaneous cryoablation (incorporating TCM elements) shows lower total costs than robotic surgery for T1a renal carcinoma treatment. A Dutch retrospective study also confirmed that multi-component interventions can indirectly reduce societal medical burdens by lowering complication rates (eg, 37% risk reduction in MCI progression to AD). While limited by its retrospective design preventing direct cost measurement, this study reasonably infers through existing evidence chains that the TCM management model demonstrates promising cost-effectiveness prospects for elderly sub-healthy populations, warranting systematic validation in future prospective research.

Limitations

Although the results of this study suggest that the TCM medical management model significantly improves the health status and quality of life of elderly subhealth populations, there are still some limitations. Firstly, the sample source has regional and population-based limitations, which may not fully represent the conditions of different regions or a broader population. Additionally, due to the inclusion criteria limiting the patients’ health conditions, the results may not apply to elderly populations with complex comorbidities or more severe health issues. Secondly, this study primarily evaluates intervention effects through self-assessment questionnaires (eg, SCL90, SF-36, GSES) and some physical examination indicators, which are subjective and may be influenced by patients’ emotions, cultural backgrounds, or cognitive abilities, thus introducing potential bias in the results. Finally, the TCM management model intervention involves multiple dimensions (such as medication treatment, exercise intervention, psychological regulation, etc). Non-blind design may also lead to placebo effects, and in the future, double-blind placebo-controlled design verification is needed. And others include the possible lack of information in medical records, non standardization of intervention implementation, and differences in follow-up time. There is also tendency score matching that does not include socio-economic indicators (such as patient income, education level), unmeasured confounding factors, etc.

There are the following limitations in this study, which need to be carefully interpreted: first, the retrospective design led to some intervention details (such as specific acupuncture point selection) unable to be accurately restored; second, although the main confounding factors were controlled by propensity score matching, unmeasured socio-economic variables may affect internal validity; third, the single-center sample limits the extrapolation of the results. In the future, multi-center prospective studies can be carried out, standardized intervention protocols can be formulated, and objective physiological indicators (such as inflammatory factor detection) can be included to enhance the evidence strength.

Conclusion

In conclusion, the TCM medical management model represents a multidimensional, holistic health intervention approach that may improve symptoms in elderly subhealth patients. Preliminary findings suggest potential benefits in enhancing health status, psychological confidence, and quality of life, while showing trends toward increased life satisfaction. While these results warrant cautious interpretation due to the retrospective design and absence of long-term follow-up, the model demonstrates preliminary clinical relevance in addressing health needs of this population. Further prospective studies with cost-effectiveness analysis are needed before broad clinical recommendations can be made.

Disclosure

The authors report no conflicts of interest in this work.

References

- Carr D, Falchetta G, Sue Wing I. Population aging and heat exposure in the 21st century: which U.S. Regions are at greatest risk and why? *Gerontologist*. 2024;64(3). doi:10.1093/geront/gnad050
- Sanderson WC, Scherbov S. Measuring the speed of aging across population subgroups. *PLoS One*. 2014;9(5):e96289. doi:10.1371/journal.pone.0096289
- Preparing for population aging. *J Pak Med Assoc*. 1983;33(7):182–183.
- Sub-Health. *Can Med Assoc J*. 1962;86(8):378–379.
- Pan Y, Yan J, Lu W, et al. Sub-health status survey and influential factor analysis in chinese during coronavirus disease 2019 pandemic. *J Korean Acad Nurs*. 2021;51(1):5–14. doi:10.4040/jkan.20241
- Yu Y, Yang S, Mao L-G, et al. Identification of potential metabolic biomarkers in Yin deficiency syndrome using LC-MS. *Anat Rec*. 2020;303(8):2121–2130. doi:10.1002/ar.24025
- Zhao L, Wu Y-F, Gao Y, et al. [Intervention mechanism of psychological sub-health by Baihe Dihuang Tang based on network pharmacology]. *Yao Xue Xue Bao*. 2017;52(1):99–105. *Pedi*
- Xie YM, Liu BY, Piao HY. [Exploration on the common characters of sub-healthy people based on clinical epidemiology]. *Zhongguo Zhong Xi Yi Jie He Za Zhi*. 2006;26(7):612–616. *Danish*
- Wu S, Lin S, Zhang Q, et al. [A study of sub-healthy status of community residents and its relevant factors in Fuzhou City]. *Wei Sheng Yan Jiu*. 2015;44(5):738–42,766. *Dutch*
- 中华中医药学会 [Chinese Society of Traditional Chinese Medicine]. 亚健康中医临床指南 [Clinical Guidelines of Traditional Chinese Medicine on Sub-health]. 中国中医药现代远程教育 [China Mod Distance Edu Tradit Chin Med]. 2006;4(4):12–15.
- Hon KL, Leung KKY. Healthcare and health promotion for the sub-health state Hong Kong population. *Hong Kong Med J*. 2021;27(1):73. doi:10.12809/hkmj198370
- Yang ZM, Yang XB, Huang L. [A literature review on the conceptual framework of sub-health]. *Zhongguo Zhong Xi Yi Jie He Za Zhi*. 2010;30(7):757–763. *Danish*
- Brüssow H. What is health? *Microb Biotechnol*. 2013;6(4):341–348. doi:10.1111/1751-7915.12063
- Zhou J, Wu Q, Wang Z. Effect of self-employment on the sub-health status and chronic disease of rural migrants in China. *BMC Public Health*. 2021;21(1):2250. doi:10.1186/s12889-021-12214-5
- Roy K, Dutt B, Patel JM, et al. SPARSH electronic sub-health centers (e-shcs) - A model of nurse-run SHCs supported by general practitioners through telemedicine. *J Family Med Prim Care*. 2022;11(9):5556–5562. doi:10.4103/jfmpc.jfmpc_2517_20
- Shi ML, Yan M-Q, Su J, et al. Effects of Dendrobium officinale ultrafine powder on sub-health mice induced by unhealthy lifestyle based on neuroendocrine immune system. *Food Funct*. 2022;13(23):12436–12450. doi:10.1039/D2FO02158G
- Luo C, Xu X, Wei X, et al. Natural medicines for the treatment of fatigue: bioactive components, pharmacology, and mechanisms. *Pharmacol Res*. 2019;148:104409. doi:10.1016/j.phrs.2019.104409
- Hao R, Jiao J, Liu X, et al. The effects of big five personality traits on sub-health in a Chinese young adults: a moderated mediation model. *J Affect Disord*. 2024;358:335–341. doi:10.1016/j.jad.2024.03.142
- Zeng Q, Liu L, Chen Y, et al. Efficacy and safety of acupuncture in managing COPD: an overview of systematic reviews. *Int J Chron Obstruct Pulmon Dis*. 2024;19:1721–1739. doi:10.2147/COPD.S464546
- Xian J, Wang L, Sun M, et al. Acupuncture for subthreshold depression: study protocol for a randomized controlled trial. *Front Psychiatry*. 2021;12:772360. doi:10.3389/fpsy.2021.772360
- Dong W, Zhang F, Lian D, et al. Efficacy and safety of tai chi for hyperlipidaemia: a protocol for systematic review and meta-analysis. *BMJ Open*. 2022;12(9):e053867. doi:10.1136/bmjopen-2021-053867
- Hu YP, Xu Z-J, Wu J, et al. [Chuzhen therapy for sub-health: a randomized controlled study]. *Zhongguo Zhen Jiu*. 2012;32(11):1019–1023. *Dutch*
- Zhao J, Liao X, Zhao H, et al. [Methodological quality evaluation of randomized controlled trials for traditional Chinese medicines for treatment of sub-health]. *Zhongguo Zhong Yao Za Zhi*. 2016;41(21):4041–4050. doi:10.4268/cjmm20162125 *Catalan*
- Zhang YJ, Wang TF, Xue XL, Wang JJ, Li GR, Han P. [Characteristics of traditional Chinese medicine syndromes and their element distributions in sub-health status: a modern literature review]. *Zhong Xi Yi Jie He Xue Bao*. 2008;6(12):1290–1293. doi:10.3736/jcim20081216 *Tsonga*
- Tang HL, Pang J, Gao L-F, et al. [Systematic evaluation on treatment of sub-health with acupuncture-moxibustion and Tuina in clinical researches]. *Zhongguo Zhen Jiu*. 2010;30(8):699–704. *Dutch*
- Xu T, Han S-M, Liu J-T, et al. [Comparison of sub-health status between Tibetan people and Han people]. *Zhonghua Yi Xue Za Zhi*. 2009;89(38):2671–2674. *Danish*
- Pan MH, Zhu S-R, Duan W-J, et al. “Shanghuo” increases disease susceptibility: modern significance of an old TCM theory. *J Ethnopharmacol*. 2020;250:112491. doi:10.1016/j.jep.2019.112491
- Dong W, Zhou H, Wu R, et al. Acupuncture methods for insomnia disorder in the elderly: protocol for a systematic review and network meta-analysis. *Syst Rev*. 2023;12(1):124. doi:10.1186/s13643-023-02287-1
- Shen J, Ai B, Shen M. Effectiveness of mild moxibustion for sub-health conditions in pre- and post-menopausal women: a randomized controlled clinical trial. *Med Sci Monit*. 2018;24:2907–2911. doi:10.12659/MSM.909721
- Zhao J, Liao X, Zhao H, et al. Evaluation on effectiveness and safety of chinese herbs in treatment of sub-health: a systematic review and meta-analysis of randomized controlled trials. *Chin J Integr Med*. 2019;25(6):471–480. doi:10.1007/s11655-018-2982-6

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